

UltraSail Solar Sail Flight Experiment, Phase I

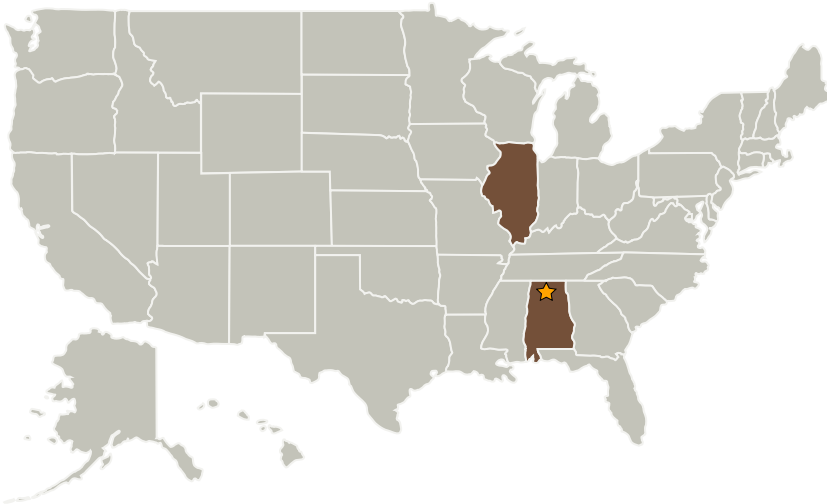
Completed Technology Project (2008 - 2008)



Project Introduction

CU Aerospace and its University of Illinois teammate propose the design, sub-component fabrication and preliminary test of an UltraSail "Cubesat" 20 m² solar sail spacecraft leading to a flight test in low Earth orbit. The complete flight test program consists of: preliminary design and sub-component tests; fabrication and assembly of a University of Illinois Cubesat spacecraft bus adapted to solar sail deployment; spaceflight qualification testing; and the flight test. The proposed innovation will demonstrate a scalable flight test in a 3 kg package of a high performance 200 m long solar sail plus two Cubesats to achieve a solar sail areal density of 5 gm/m², and a large cost reduction factor for flight test of advanced solar sails. Successful development of the UltraSail solar sail will enable very high energy inner heliosphere and interstellar scientific missions with large scientific payloads. In addition, near-earth missions, such as Heliosstorm for early warning of solar storms, will provide more warning margin as the solar sail performance is increased with UltraSail technology.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Marshall Space Flight Center (MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
CU Aerospace, LLC	Supporting Organization	Industry	Champaign, Illinois



UltraSail Solar Sail Flight Experiment, Phase I

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Organizational Responsibility	1
Project Management	2
Technology Areas	2

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

UltraSail Solar Sail Flight Experiment, Phase I

Completed Technology Project (2008 - 2008)



Primary U.S. Work Locations

Alabama

Illinois

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

David L Carroll

Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.4 Advanced Propulsion
 - └ TX01.4.1 Solar Sails